CLAIMS

What is claimed is:

1. A method for providing wireless communication, said method comprising:

providing a plurality of frequency channels in each of a plurality of portions of a service area, wherein a same frequency channel of said plurality of frequency channels is provided for use in two or more adjacent portions of said service area; and

mitigating interference by making particular channels of said plurality of channels available for use by network nodes disposed in said portions of said service area based upon dynamically determined communication link metrics.

2. The method of claim 1, wherein said mitigating interference comprises:

selecting a channel from said plurality of channels for communication with a particular network node using adaptive dynamic channel selection to identify a channel having a best communication attribute with respect to said network node.

3. The method of claim 1, wherein said mitigating interference further comprises:

selecting a time division of said particular channels for use in communicating with particular network nodes based upon said dynamically determined communication link metrics.

4. The method of claim 1, wherein said mitigating interference comprises:

selecting at least two channels from said plurality of channels for communication with a particular network node such that transmission of identical data on said at least two channels is provided for post data selection.

5. The method of claim 1, wherein said mitigating interference comprises:

selecting at least two channels from said plurality of channels for communication with a particular network node such that data is divided for transmission on said at least two channels for time/frequency coding.

6. The method of claim 1, wherein said mitigating interference comprises:

limiting transmission duty cycles of network nodes with respect to each active channel of said plurality of channels.

7. The method of claim 1, wherein said dynamically determined communication link metrics comprise interference level information.

8. The method of claim 1, wherein said dynamically determined communication link metrics comprise signal propagation level information.

9. The method of claim 1, wherein said dynamically determined communication link metrics comprise traffic load information.

10. The method of claim 1, wherein said dynamically determined communication link metrics comprise quality of service information.

11. The method of claim 1, further comprising:

selecting network nodes for simultaneous use of said particular channels as a function of spatial characteristic groupings of said network nodes.

12. The method of claim 1, wherein said each said frequency channel of said plurality of frequency channels is provided for use in all portions of said service area.

13. The method of claim 1, wherein said plurality of frequency channels are in an unlicensed frequency band, and wherein said interference comprises interference associated with external interference sources.

14. The method of claim 1, wherein said mitigating interference comprises assigning a different channel of said plurality of channels for use by a particular network node in an uplink and a downlink.

15. A wireless communication network system comprising:

a plurality of communication sectors of a service area, wherein each communication sector has a plurality of channels associated therewith, and wherein adjacent ones of said communication sectors have at least one same channel of said plurality of channels associated therewith; and

channel management control apparatus making particular channels of said plurality of channels available for use by network nodes of said network system as a function of external interference experienced with respect to one or more channels of said plurality of channels.

16. The system of claim 15, wherein said channel management control apparatus makes particular time divisions within said particular channels available for use by said network nodes as a function of dynamically determined channel conditions.

17. The system of claim 15, wherein each channel of said plurality of channels is provided in each communication sector of said plurality of communication sectors.

18. The system of claim 17, wherein said plurality of channels comprise at least 3 frequency channels.

19. The system of claim 17, wherein said plurality of channels are each within an unlicensed band and subject to external interference.

20. The system of claim 15, wherein said plurality of communication sectors comprise communication sectors of a multi-sectored base station.

21. The system of claim 15, wherein said plurality of communication sectors comprise communication sectors of a plurality of base stations.

22. The system of claim 15, wherein said channel management control apparatus is disposed in a central configuration with respect to a plurality of base stations of said communication network.

23. The system of claim 15, wherein said channel management control apparatus is disposed in a distributed configuration with respect to a plurality of network nodes of said communication network.

24. The system of claim 15, wherein said channel management control apparatus makes at least 2 channels of said plurality of channels available for use simultaneously by a particular network node to mitigate said external interference.

25. The system of claim 24, wherein said at least 2 channels transmit identical data simultaneously.

26. The system of claim 24, wherein said at least 2 channels transmit different portions of an information communication.

27. The system of claim 15, wherein said channel management control apparatus makes at least a first channel of said plurality of channels available for use by a particular network node and makes at least a second channel of said plurality of channels available for use by said particular network node to mitigate said external interference.

28. The system of claim 15, wherein said channel management control apparatus implements an at least 2 tier channel scheduling strategy.

29. The system of claim 28, wherein a first tier of said channel scheduling strategy is executed centrally and a second tier of said channel scheduling strategy is executed distributedly.

30. The system of claim 28, wherein said first tier of said channel scheduling strategy updates channel assignments at a relatively slow pace and wherein said second tier of said channel scheduling strategy updates channel assignments in real-time.

31. The system of claim 28, wherein a first tier of said channel scheduling strategy assigns transmission time period opportunities to communication network base station nodes to support groups of subscriber station nodes.

32. The system of claim 31, wherein a second tier of said channel scheduling strategy assigns transmission time periods among subscriber station nodes of said groups of subscriber station nodes.

33. The system of claim 15, wherein said channel management control apparatus makes a different channel of said plurality of channels available for use by a particular network node in an uplink and a downlink.

34. A method for providing wireless communication, said method comprising:

providing a plurality of frequency channels in various portions of a service area, wherein a first frequency channel of said plurality of frequency channels is provided in each of two or more adjacent portions of said service area; and

activating said first frequency channel in parallel with respect to said two or more adjacent portions of said service area by selecting network nodes for parallel communication links as a function of spatial characteristic groupings.

35. The method of claim 34, further comprising:

determining a spatial signature for network nodes operable in said service area, wherein said network nodes selected for parallel communication links have a compatible spatial signature.

36. The method of claim 35, further comprising:

determining compatibility of said spatial signatures by correspondence to a schedule of active radios vector.

37. The method of claim 36, further comprising:

weighting a plurality of schedule of active radios vectors such that a heaviest weighted schedule of active radios vectors provides for a highest number of parallel communication links, wherein said plurality of schedule of active radios vectors comprises said schedule of active radios vector.

38. The method of claim 37, further comprising:

selecting a schedule of active radios vector for grouping network nodes having a compatible spatial signature into is based upon a schedule of active radios vector having a highest weight.

39. The method of claim 35, wherein said activating said first frequency channel comprises:

assigning transmission time period opportunities of said first frequency channel to groups network nodes as a function of said spatial signatures.

40. The method of claim 34, wherein said activating said first frequency channel further comprises:

scheduling individual time slots of said first frequency channel transmission time period opportunities to particular network nodes as a function of communication demand associated with said network nodes.

41. The method of claim 34, further comprising:

dynamically changing a frequency channel utilized by a particular network node based upon a determined channel quality metric.

42. The method of claim 34, further comprising:

providing simultaneous transmission of a same information content using two frequency channels; and

selecting a valid information content for use from said same information content transmitted using said two frequency channels.

43. The method of claim 34, further comprising:

providing simultaneous transmission of portions of information content using two frequency channels; and

deriving said information content by combining said portions of information content transmitted using said two frequency channels.

44. The method of claim 34, wherein a second frequency channel of said plurality of frequency channels is provided in each of said two or more adjacent portions of said service area.

45. The method of claim 44, wherein said first and second frequency channels are a part of an unlicensed band of frequency channels.

46. A wireless broadband access network system comprising:

a base station having a plurality of sectors, wherein each of a plurality of channels is associated with each sector of said plurality of sectors; and

a scheduler in communication with said base station and providing information as to channels of said plurality of channels which are to be activated in parallel with respect to assigned transmission time period opportunities.

47. The system of claim 46, further comprising:

a plurality of base stations having a plurality of sectors, wherein each of said plurality of channels is associated with each sector of said plurality of sectors, and wherein said scheduler is in communication with said plurality of base stations providing information as to channels of said plurality of channels which are to be activated in parallel with respect to assigned transmission time period opportunities.

48. The system of claim 46, wherein said base station comprises:

a plurality of wireless nodes, wherein a wireless node of said plurality of wireless nodes is associated with a sector of said plurality of sectors.

49. The system of claim 48, wherein said wireless nodes comprise:

an access point operable according to an unlicensed wireless spectrum protocol.

50. The system of claim 46, wherein said scheduler comprises:

a two tiered scheduler, wherein a first tier of said scheduler assigns time per group of subscriber stations and a second tier of said scheduler assigns individual time slots within said assigned time to particular subscriber stations of said group of subscriber stations.

51. The system of claim 50, wherein said groups of subscriber stations comprise subscriber stations having similar spatial attributes.

52. A wireless communication system comprising:

a plurality of radios disposed to provide wireless communication links with respect to different portions of a service area, wherein at least a first set of radios of said plurality of radios disposed to provide wireless communication links with respect to said different portions of the service area utilize a first frequency channel; and

a vector array setting forth a plurality of combinations of radios of said first set of radios that are activated in parallel to provide simultaneous communication links with respect to subscriber stations operable in said service area.

53. The system of claim 52, wherein said first set of radios comprise a radio of each sector of a multi-sectored base station.

54. The system of claim 52, wherein said first set of radios comprise a radio of adjacent base stations.

55. The system of claim 52, further comprising:

a plurality of spatial signature vectors setting forth information for each one of said subscriber stations with respect to said first set of radios, wherein each of said subscriber stations has a spatial signature vector of said plurality of spatial signature vectors associated therewith.

56. The system of claim 55, wherein said spatial signature vectors provide information with respect to a combination of radios of said first set of radios that are acceptable to be activated in parallel when a radio of said first set of radios is in information communication with a corresponding one of said subscriber stations.

57. The system of claim 55, wherein vectors of said vector array are assigned a weight corresponding to a number of radios that are activated in parallel associated therewith.

58. The system of claim 57, wherein each said subscriber station is identified with a vector of said vector array having a combination of radios of said first set of radios compatible with the subscriber station's spatial signature vector based upon said weighting.

59. The system of claim 55, further comprising:

a scheduler operable to select, as a function of said spatial signature vectors, a vector from said vector array identifying a combination of radios for use in providing communication links to ones of said subscriber stations.

60. The system of claim 59, wherein said scheduler updates said vector array to indicate said vector is active.

61. The system of claim 59, wherein said scheduler is further operable to assign particular time slots available using said combination of radios to particular subscriber stations.

62. The system of claim 52, wherein at least a second group of radios of said plurality of radios disposed to provide wireless communication links with respect to said different portions of the service area utilize a second frequency channel, such that said first and second frequency channels are provided in overlapping portions of the service area.

63. The system of claim 62, further comprising:

a channel selection controller dynamically selecting a frequency channel of said first and second frequency channels having a highest channel quality metric associated therewith for use in communicating with a subscriber station.

64. The system of claim 62, further comprising:

a controller selecting a valid frame from frames simultaneously transmitted using said first and second frequency channels.

65. The system of claim 62, further comprising:

a controller deinterleaving a frame from data simultaneously transmitted using said first and second frequency channels.

66. The system of claim 52, wherein said plurality of radios comprise 802.11 compliant access points.

67. The system of claim 66, wherein a medium access control layer utilized with respect to communications via said first frequency channel is not 802.11 compliant.

68. The system of claim 66, wherein a medium access control layer utilized with respect to communications via said first frequency channel is adapted to facilitate synchronous data communication.

69. The system of claim 66, wherein said first frequency channel is in an unlicensed frequency band.